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Translation

SOVIET SCIENCE AND TECHNOLOGY POLICY

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SOVIET SCIENCE AND TECHNOLOGY POLICY

This non-serial report contains selected translations of Russian articles on the planning and administration of Soviet research and development and the introduction of scientific achievements into industry.

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'PRAVDA' EDITORIAL URGES REORGANIZATION OF S&T

Moscow PRAVDA in Russian 7 Apr 81 p 1

[Editorial: "To Increase the Effectiveness of Science"]

[Text] In the present five-year plan, the development of science and technology must be increasingly subordinated to accomplishing the economic and social tasks of Soviet society, to accelerating the transition of the economy to the path of intensive development, and to increasing the effectiveness of civil production.

"Today, looking forward for five and for ten years," said Comrade L. I. Brezhnev at the 26th CPSU Congress, "we cannot forget that it is during these years that the economic structure with which the country will enter the 21st Century will be created and established. It must embody the basic characteristics and ideals of a new society, be in the vanguard of progress, and personify the integration of science and production, the unbreakable union of creative thought and creative labor."

The congress has put great tasks before Soviet science. The effectiveness of research must be increased, and the introduction of scientific and technical achievements into production must be accelerated. It is necessary to provide for surpassing development of fundamental research and to increase the yield of results from applied research. A number of problems have been defined and scientists' main attention will be directed toward their solution. At the same time, they are called upon to become involved in those fields where the present level of knowledge offers an opportunity to move forward rapidly and successfully.

The broad front and impressive significance of the intended research program requires the energetic utilization of the efforts and reserves of science itself. And these reserves are significant. Far from all collectives of institutes and laboratories are working at full output and a number of them are still dominated by petty subject matter. Documents of the congress note the necessity of improving the organization of the whole system of scientific research. It must be significantly more flexible and mobile, intolerant of fruitless laboratories and institutes. The USSR, republic, and specialized academies, ministries, and agencies are obliged in time to define and change the direction of research and development and the organizational structure of their scientific institutions to correspond to the demands of the scientific-technical revolution. Success in improving scientific work depends in large measure on the coordination of research. The "first fiddle" here belongs to the USSR Academy of Sciences. The first steps in this direction have been made and are bearing positive results. The activities of the union republic academies of sciences are regularly coordinated. The USSR Academy of Sciences has conducted joint sessions with the USSR Academy of Medical Sciences and with the All-Union Academy of Agricultural Sciences imeni V. I. Lenin, which have resulted in the compilation of research plans. Interaction between academy institutes and ministerial institutes is becoming stronger.

The unification of efforts and the isolation of leading areas, as a rule, accelerates and increases the success rate of research. Much research has already been crowned by the achievement of effective therapeutic equipment, spoken of at the 26th CPSU Congress, new varieties of agricultural plants, progressive technological processes, materials, machines, devices, and instruments. In the current five-year plan, it is intended that 160 complex and special-purpose programs be implemented. At the same time, a noticeable step will have been taken in accelerating the transition of the economy to an intensive path of development.

Effectiveness must be further increased in exploiting the potential of higher educational institutions, in which a significant portion of the country's scientists are concentrated. The USSR and union republic Ministries of Higher and Secondary Specialized Education are called upon to exploit the possibilities of higher schools more widely and to strengthen mutual relationships between higher educational institutions and large associations and enterprises,with branches of production that are experiencing a need for serious research and development.

Increasing the effectiveness of scientific investigation means also arming with the most improved, advanced methods of research and speeding them up. It is necessary to expand the automation of planning-design and scientific-research work by applying computer technology. In a number of academy, educational, and ministerial institutes, such experience has been accumulated, and appropriate automated systems have been developed. It is important that scientific and planning-design collectives actively assimilate new methods and technical means that will make possible the more rapid achievement of the intended goals.

In demanding high yield from research collectives, more attention must be given to the needs of science; equipment and instruments must be provided to scientific institutions, and experimental production must be expanded. The USSR, republic, and ministerial academies and other scientific institutions must have help in this from the machine-building ministries and, above all, from the Ministry of Instrument Making, Automation Equipment, and Control Systems. Scientific collectives raise serious claims with supply and equipment organizations. The system for the material support of science does not have efficiency or flexibility and this makes research and development difficult. These criticisms are not new, and it is time that USSR State Committee for Material and Technical Supply listen to the voice of scientists. The scientific-technical and patent information system must also be improved, as it serves as a compass for choosing directions for scientific investigation.

Questions of scientific-technical progress, improvement in the work of research and planning-design organizations, and the creation of conditions for increasing the success-rate of their efforts must be kept within the field of purview by party committees. It must be seen to that scientists and the engineering-technical intelligentisia take active part in the All-Union Socialist Competition for Fulfilling and Overfulfilling the Tasks of the 11th Five-Year Plan. We have a number of worthy examples of party concern for the development of science and the increase of its effectiveness. A large amount of support has been given to scientific institutions by Moscow, Leningrad, Ukrainian, and other party organizations. At the congress, the Novosibirsk and Sverdlovsk party obkoms, which did much to strengthen relations between science and production, were honored with favorable speeches.

This is the correct course, for the party of communists proceeds on the assumption that the building of a new society is inconceivable without science.

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FEDOSEYEV ARTICLE ON SOVIET SCIENCE DAY

Moscow IZVESTIYA in Russian 18 Apr 81 p 3

[Article by Academician P. Fedoseyev, vice-president of the USSR Academy of Sciences: "Scientists' High Obligation: 19 April Is Soviet Science Day"]

[Text] This year our scientists have their day of celebration -- Soviet Science Day -- during the portentious days when the country has started the implementation of the grand design of the 26th CPSU Congress. The high forum of Soviet Union communists gave an unusually large amount of attention to the further development of science and, on this basis, the acceleration of scientific-technical progress. "The party of communists," said Comrade L. I. Brezhnev, speaking at the congress, proceeds on the assumption that building a new society is inconceivable without science." The congress indicated the necessity of moving all economic sectors to the forefront of science and technology. This aim is the concretization of the historical task of organically uniting the achievements of the scientific-technical revolution with the advantages of socialism.

The country's scientists actively participated in the pre-congress discussion of the draft Basic Directions. In the final text approved by the party congress a number of notes and additions proposed by scientific institutions were taken into consideration. Thus, the necessity for the surpassing development of fundamental research was stressed. Of importance is the addition concerning the necessity of providing for the development and implementation of the Complex Program for Scientific-Technical Progress. Basic areas were added also to the thesis on strengthening interaction among the social, natural, and engineering sciences.

Knowledge of the microstructure of matter has been and remains one of the chief fundamental problems of science. Deeper knowledge of the structure and characteristics of the interaction of elementary particles would undoubtedly be a huge step in conquering the forces of nature, like the one resulting from the discovery of atomic structure.

Broad experimental and theoretical research on the physics of the atomic nucleus and nuclear reactions will continue. Much attention will be given to the development of accelerator technology, research facilities, and the automation of nuclear physics experiments.

The decisions of the congress contemplate the further development of the fuel and energy complex. Envisaged is improvement in the structure of the fuel-energy balance and the rapid development of nuclear energy, including the creation of atomic electrostations with fast-neutron reactors that permit a more effective utilization of nuclear fuel.

In the new five-year plan, intensive research development must be directed toward the physics of high-temperature plasma and to the problem of controlled thermonuclear synthesis. Work will be continued on laser and electron thermonuclear synthesis, and also on the solution of the most important technical problems of thermonuclear power.

In Comrade L. I. Brezhnev's report, it was stressed that it is machine building which, above all, throws open the door for what is new and advanced and for what has been created by scientific and engineering thought. Therefore, in the next five-year and ten-year periods, a large complex of problems will be developed that relate to raising the quality, reliability, and productivity of machines and to lowering their materials content and energy consumption. Great hopes in this connection are being placed on the scientific institutions of the Academy of Sciences.

In the 11th Five-Year Plan, serious attention will be given to chemical science, the development of the theory of chemical structure, reactive capabilities and chemical kinetics, the production of new polymers, physiologically active compounds, composites and other materials with predetermined properties, the development of technological processes that provide complex and maximum full utilization of raw materials and avoid the pollution of the environment, the creation of effective preparations for increasing the yield of petroleum strata, and the production of liquid fuel from solid fuels.

In the Basic Directions, the necessity is stressed for further understanding of the mechanism of physiological, biochemical, and genetic life processes, improvement in the methods of prophylaxis, diagnosis, and treatment of the more common diseases, and the development of new medicines, preparations, and medical equipment.

The successes of fundamental research in the biological sciences have made possible the intensive development of traditionally applied areas such as technical biochemistry, technical microbiology, and the synthesis of biologically active compounds, and conceptually new possibilities have been discovered for solving a whole series of important practical problems. Genetic engineering has been brought about and its first results have been provided. An important future area has been formed -- bioengineering -- which is oriented toward the use of biological agents and processes for practical purposes.

In the five-year period that is beginning, work will be developed to bring about highly productive varieties of plants, strains of livestock, and cultures of useful microorganisms and to create new physiologically active substances for agriculture and medicine. Long-range programs have been put together for research in the rational utilization and conservation of the land and water resources of the country, and in the chemicalization, mechanization, electrification, and automation of agriculture. In Saratov, the Institute of Social-Economic Problems in the Development of the Agrarian-Industrial Complex of the USSR and the Institute of the Biochemistry and Physiology of Plants and Microorganisms are beginning their operation. Scientists of the USSR Academy of Sciences are participating in the development of a USSR food program for 1981 to 1985 and for the period to 1990.

Earth sciences will continue research on the conditions of the origin, patterns of distribution, and rational means for utilization of useful minerals.

Increasingly closer interrelationships between the development of the economy and the social-political progress of society is a characteristic feature of mature socialism. And this requires the further intensive development of social sciences and a significant strengthening of the effectiveness of research in the humanities.

Generalizing experience in the development of the social and class structure of our society during the last decade, the Summary Report of the CPSU Central Committee to the 26th CPSU Congress indicates a real possibility that "the establishment of a classless structure for society, basically and mainly, will take place within the historical framework of mature socialism." Thereby, a substantial theoretical contribution is being made to Marxist-Leninist study on the correlation of the two phases of communist formation from the point of view of the development of their social structures. Taking this prospect into account, largely new analysis must be done on such problems as the coming together of the two forms of property, the wiping out of differences between city and country and between intellectual and physical labor, prospects for the development of the political system of socialism, and so forth.

Many new positions are contained also in those sections of the report that speak of strengthening the material and spiritual foundation of the socialist form of life and formation of a new individual and on the development of a world socialist system.

Conceptually important is the idea of close mutual relationships between social-economic policy and the educational work of the party and of the necessity for building all work for the improvement of the socialist form of life and the overcoming of negative features in people's conduct on the sound foundation of social-economic policy.

An urgent area for scientific investigation in the coming years will be the development of ways to increase the effectiveness of civil production, the level of economic management, the introduction of advanced methods of socialist administration, fuller combination of centralized control with economic independence and enterprise initiative, and a more effective interaction between planning and control by economic sector and planning and control by region.

Among the most important tasks is the generalization of experience in the revolutionary-transformation activity of the CPSU and of the international communist and workers movement. The completion of fundamental works on the history of the CPSU and on the theory and history of the international workers movement will have important meaning in this connection.

At the center of the theoretical activity must be work on the problems of dialectic and historical materialism, scientific communism, and political economy. The lagging effort on fundamental works on these problems must be accelerated.

In their research activity, sociologists must keep in mind the decision of the 26th CPSU Congress on introducing necessary changes and additions to the operational CPSU Program. We are speaking about generalizing new experience in socialist and communist construction, providing characteristics to the development of socialist society as a historically necessary, regular stage in the establishment of the communist structure, and to reflect the conceptually important phenomena of international life.

The position that science is a direct productive force has become a literal truth. But this position must be related to the understanding that science is becoming a direct productive force only when it is embodied in the means of production and technological developments and then in the production of material wealth. Unfortunately, great difficulties arise at the stage of the realization of scientific achievements and the introduction of technological innovations into mass production. The Soviet Union has enriched the world with many discoveries that pave the way for fundamental improvement in engineering and production technology, but we ourselves in a number of instances are behind in the scale of applying these progressive technological methods.

In the analysis of the reasons for such a position, a number of circumstances have to be considered, including technical-economic ones. It often happens that in the development of new technology there is a failure to provide evident technical-economic advantages in comparison with existing techniques and technology. In many cases, this is caused by an imperfect economic system in which it is unprofitable for enterprises to make products more cheaply because this leads to the worsening of production indicator assessments of their activity. This circumstance was fully covered in the Summary Report of the CPSU Central Committee to the 26th CPSU Congress.

With the aim of uniting science and production, our country is implementing a transition to continuous special-purpose program planning. The development of special-purpose complex programs, as was stressed at the congress, provides the opportunity to unite the efforts of scientists, producers, and ministerial workers in the solution of the most important scientific-technical problems and to reduce the lengths of time necessary for creating and assimilating new technology.

In the 10th Five-Year Plan, the Academy of Sciences took active part in work on 111 scientific-technical programs of 209 such programs approved by the USSR State Committee for Science and Technology for 1976-1980. The USSR Academy of Sciences was the head organization for such important programs as "World Oceans," "Molecular Biology," "Scientific and Technical Information," and "Seismology and Earthquake-Proof Construction." A large amount of work is conducted by the academy on the energy program. In the new 11th Five-Year Plan, it is intended to implement 160 scientific-technical programs.

One of the real forms for the integration of science and production consists of scientific-production associations. The USSR Academy of Sciences and the USSR State Committee for Science and Technology together with the economic ministries must examine and decide questions on the organization of work of scientific-production associations and define the mechanism for transferring fundamental research results to practice.

Improvement in the organization of scientific research largely depends on their rational and efficient coordination. As is known, the 25th CPSU Congress gave to the Academy of Sciences the responsibility for coordinating all scientific work in the country. During the past five-year plan, the coordination of scientific research was improved, and the USSR Academy of Sciences strengthened ties with the specialized academies, with higher schools, and with ministerial scientific research institutions.

Here, the topical sessions of the USSR Academy of Sciences general assembly had important significance. One was a session of the general assembly that took place in December 1978 with participation by the All-Union Agricultural Academy and the USSR Ministry of Agriculture and discussed the tasks of Soviet science in implementing programs for the further development of agriculture in the country. Another was a joint session of the general assembly of our academy and the general assembly of the Academy of Medical Sciences that took place in November of last year and examined questions in the development of fundamental research for medicine and health. Also very useful was a session of the December general assembly of the USSR Academy of Sciences in 1979, at which there were discussions of the tasks of science in the solution of the urgent problems of our economy. Such work must continue and be improved.

The practical implementation of the principle of priority is acquiring decisive significance. This means that it is necessary to provide for the concentration of scientific efforts and resources on the main areas on which progress in science and the solution of key problems in social-economic development depend. In this connection, the Academy of Sciences should keep the whole research front within its purview, should not allow lagging in any area, should not neglect possibilities for creative breakthroughs in any sector that, at a particular time, may not seem hopeful but could in the long run yield good results.

Celebrating their day -- Soviet Science Day, all detachments of Soviet scientists unanimously assure the CPSU Central Committee and the General Secretary of the CPSU Central Committee and the Chairman of the Presidium of the USSR Supreme Soviet, Comrade L. I. Brezhnev, personally, that they will put maximum effort into fulfilling the historic decisions of the 26th CPSU Congress.

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MARCHUK ARTICLE ON SOVIET SCIENCE DAY

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 19 Apr 81 p 2

[Article by G. Marchuk, deputy chairman of the USSR Council of Ministers and chairman of the USSR State Committee for Science and Technology: "The Leading Edge of Creativity"]

[Text] This year, the country is observing Soviet Science Day at a propitious time. The majestic program of creation outlined by the 26th CPSU Congress is being realized already in the concrete works of the 11th Five-Year Plan, which is gathering momentum. In its accomplishment, a special role belongs to scientists, designers, engineers, specialists and innovators of industry who have been given the responsible task of leading all sectors of the economy to the leading edges of science and technology.

"The party of communists believes that the construction of a new society is simply not possible without science," noted Comrade L. I. Brezhnev in his report to the 26th CPSU Congress. These words not only stress the leading role of science, but also its high responsibility to society.

The results of the last five-year plan can serve as a graphic confirmation of this. During these years, on the basis of the achievements of fundamental and applied science and in close cooperation with production, about 20 thousand models of highly productive machines, equipment, instruments, and materials were created, and 17.5 thousand forms of new technology were assimilated in production. About 60 thousand mechanized and automatic production lines were introduced at enterprises, and 25 thousand shops, work stations, or individual factories underwent complex mechanization or automation.

Still broader is the work front outlined in the Basic Directions for the Economic and Social Development of the USSR for 1981-1985 and for the Period to 1990, which was adopted by the 26th CPSU Congress. In accord with this document, the efforts of scientific-technical thought should be focused on the central task of giving the country the new engineering and technology and the materials and instruments that will allow the whole economy to accomplish a transition to an intensive mode of development and, also on this basis, to provide for further growth in the welfare of the Soviet people.

Thus, the key problem for the country's economic and social development remains the achievement of high rates of scientific-technical progress. To achieve them, 160 interagency complex programs developed for the current five-year plan have been called upon in particular: these programs were developed by the USSR State Committee for Science and Technology jointly with the USSR Academy of Sciences and USSR Gosplan. They are directed toward the solution of the most important scientific-technical problems in leading sectors of the economy: energy, metallurgy, chemistry, transportation, agriculture, and health. In this connection, in contrast with the last five-year plan, it is proposed that more than 60 percent of the tasks outlined in these programs for the creation of new equipment, machines, and instruments and almost half the tasks for developing new materials and technological processes will be carried through to industrial assimilation.

The country has the necessary prerequisites for conducting significant research and scientific developments. One of them is the large potential of our science and its steady reduction of the gap between it and the demands of practice. In its turn, during recent years, there has been immeasurable growth in the level of domestic industry, which permits the implementation of very bold and large-scale ideas. But the most important thing is that our party and government show exceptional attention to the development and needs of science.

An obvious confirmation of this is the decree of the CPSU Central Committee and the USSR Council of Ministers which established USSR Council of Ministers prizes for the fulfillment of complex scientific research, for engineering-design and technological projects along the most important directions in the development of the economy and its sectors, and for the introduction of the results of these projects and research. The USSR Council of Ministers will award these on Soviet Science Day on presentation by the USSR State Committee for Science and Technology and the All-Union Central Council of Trade Unions, beginning this year.

The first laureates of USSR Council of Ministers prizes have become well-recognized throughout the country. One can boldly state that their projects withstood the most serious competition, where the demands of innovation, progress, and depth of scientific solutions have been verified by the most objective indicator -- practical results.

For example, one of the above-mentioned prizes for complex projects was for the on-line completion of a continuous medium shaping mill "450" at the West-Siberian Metallurgical Plant for the preparation of an improved assortment of profile shapes. The productivity of this mill is up to 1.2 million tons of rolled stock per year, which is more than that of foreign counterparts by a factor of 2 or 3.

At the same West-Siberian Metallurgical Plant, an automated control system was introduced, sharply increasing its effectiveness and product quality. The yearly economic effect from its introduction exceeds 6 million rubles. But the chief aim of this collective development is the broad introduction of automated control systems in metallurgical production. Many of the solutions found are already being applied at a number of enterprises.

It is quite clear that the solution of the problem of automating production can be accomplished only on the basis of effective computer technology. In particular, the scientists and specialists of the computer center of the Siberian Department of the USSR Academy of Sciences, recognized by a prize, have developed the "Sigma" adaptive control system intended for machine-building enterprises with various production characteristics. Figuratively speaking, this system can automatically structure its own mathematical support on the parameters of any concrete enterprise, and this lowers expenditures both for the design of a system and for its constant development.

One of the main directions in scientific-technical progress has involved the creation of new materials -- above all, high-grade steels and irons. In the solution of this task, a large contribution has been made by the collectives of scientific-research institutes and many enterprises. As a result of their complex research, a high-strength, cold-resistant steel has been created for large-diameter gas and oil pipeline. Immediately, pipe was obtained at present industrial aggregates that could work in the severe conditions of the northern regions of our country.

There is no need to say what important significance there is in the problem of deep, complex processing of raw materials being mined and their more complete extraction. Upon presentation by the USSR Ministry of the Petroleum Industry, a USSR Council of Ministers prize was awarded to a complex of scientific-research, technological, and planning-design projects in the field of extraction, commercial collection, and transportation and preparation of petroleum and by-product gas that has provided rapid and effective exploitation of the petroleum deposits of Western Siberia. In this connection, environmental questions have been successfully solved, the periods of time required for initiating operations at deposits have been shortened by a factor of 2 to 3, and capital expenditures have been decreased by a factor of 1.5 to 2.

Recognized by a prize also was a complex of research in the field of geological, technological, and economic problems of industrial exploitation of poor apatite-nepheline ores of the Khibiny mountain-mass and the development and introduction into production of technology for their extraction and enrichment. These projects provided a growth in reserves equal to 1.7 billion tons and permitted increasing the projected capacity of the "Apatit" production association and prolonging its operations from 20-25 years to 50-60 years.

Specialists of the Scientific-Production Association for Machine Building Technology and the Podol'sk Machine-Building Plant imeni Ordzhonikidze made a large contribution to the solution of the problem of reliability and durability of machines by developing a new corrosion-resistant, non-nickel steel, by assimilating its metallurgical production and the technology of manufacturing components for AES equipment.

A task of great importance was accomplished by the collective of the Institute of Superhard Materials of the UkSSR Academy of Sciences, in creative cooperation with organizations of the Ministry of the Petroleum Industry, the USSR Ministry of Geology, the Ministry of the Gas Industry, and the Ministry of Chemical and Petroleum Machine Building. As a result of joint projects, the new superhard composite material "slavutich" was created. Bits fitted with this material that are being applied in drilling deep and superdeep wells are having high operational quality and permit increasing the working rate by a factor of 2. Just from 1976 to 1979 the "slavutich" bits permitted the release of up to 5 million carats of large, scarce natural diamonds and the saving of over 450 tons of hard alloy.

Scientists and specialists from the Institute of Problems in the Materials Sciences of the UkSSR Academy of Sciences and the Institute for Designing Metallurgical Plants developed the scientific bases and the production technology for powdered items on the basis of iron and organized their serial manufacture at the Brovary Powder Metallurgy Plant. This is the first very large specialized enterprise in our country or in Europe equipped with unique domestic equipment. Powder metallurgy methods here have achieved 34 new materials with specified characteristics. The plant supplies its items to 331 enterprises of 26 ministries and agencies. The savings in metal from the introduction of powder components constitutes 260 thousand tons a year.

At the same time, in many cases, metal in general can be successfully replaced by applying polymers and plastics. To improve their operational characteristics and durability is the goal taken on by developmental specialists for large-capacity production of ethyl benzene at the Nizhnekamskneftekhim production association. Technological lines for an ethyl benzine production capacity of 172 thousand tons per year have undergone industrial tests and have been recommended for series production.

Also of great significance for the economy are projects by prize winners that have led to the creation and industrial introduction of motor vehicle tires made from domestic synthetic rubber. Owing to this, the share of consumption of natural rubber used in the production of the basic assortment of tires has been reduced in 1980 to 1.5 percent and, at such a large factory as the Yaroslavl' tire factory, from 32 percent in 1965 to 1.3 percent in the past year. At the same time, the average operational running of motor vehicle tires has been increased.

Also recognized with a prize was the work of the collective of the Institute of Chemical Physics of the USSR Academy of Sciences, which conducted important research on a very "hot point" in medicine -- chemical therapy for malignant tumors. Of special significance here is the development of fundamental principles that would allow the achievement of effective preparations with a radically new mechanism of action. At the institute, a new antitumor preparation, "Dibunol," was created and then experimentally and clinically studied. It is effective in the treatment of bladder tumors and radiation cystitis.

Other works honored with USSR Council of Ministers prizes also have great significance for science, engineering, and the economy as a whole.

Even such a short survey of these works demonstrates that their authors have made a large contribution to hastening the rate of scientific-technical progress, to raising the effectiveness and quality of work, and have created a real scientific reserve for the future. The baton of these achievements today is being passed on to the 11th Five-Year Plan, which is to become an important stage in the economic and social development of the country. There is no doubt that Soviet scientists, designers, engineers, specialists, and innovators of production will apply all their efforts to the fulfillment with honor of the tasks posed by the 26th congress of our party.

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PATON ON COORDINATING FUNDAMENTAL AND APPLIED SCIENCE

Moscow EKONOMICHESKAYA GAZETA in Russian No 8, Feb 81 p 11

[Article by Academician B. Ye. Paton, president of the UkSSR Academy of Sciences and director of the Institute of Electric Welding, Kiev: "The Union of Science and Production"]

> [Text] In the 11th Five-Year Plan, the development of science and technology must be subordinated to a still greater degree to the solution of the most important problems in the further progress of Soviet society and to the acceleration of the transition by the economy to the path of intensive development.
>
> -- From the CPSU Central Committee draft for the 26th CPSU Congress

During the years of the concluded five-year plan, as was foreseen by the decisions of the 25th CPSU Congress, scientific-technical progress in our country accelerated. Impressive successes were achieved in the fields of fundamental and applied research, experimental and design developments, and in the introduction of new technology. On this foundation, the effectiveness of civil production was increased.

Still greater tasks are being placed before national science and technology in the 11th Five-Year Plan. In scientific-research collectives, the CPSU Central Committee draft for the 26th CPSU Congress is being profoundly studied and excitedly discussed. The tasks flowing out of this most important party document have been concretized. One of the central questions is the search for ways to further strengthen relations between science and production and to improve the management of this process.

ON A SCIENTIFIC FOUNDATION

The Academy of Sciences of the Ukrainian SSR and its scientific institutions have accumulated valuable and effective experience in introducing scientific ideas and technical developments into practice. Enriching and developing what has been achieved, we are continuing the search for new forms of fruitful ties between scientific institutions, on the one hand, and enterprises and economic sectors, on the other, and we are verifying the operability of measures mapped out for accelerating movement through the "science-technology-production" cycle. The efforts of the scientists' collective of the Institute of Electric Welding are directed toward this end.

Practice has shown that increasing the role of science in further accelerating technical progress and rates of growth in the country's economic potential is inseparably linked with widening and deepening fundamental research. This is one of the chief elements of strategy for the development of science in our country.

It is fundamental research that serves as a source of nourishment for scientific-technical progress and is the basis for conceptually new technology. Thus, the study of the physical-chemical processes in liquid metal and slag meltings and the properties of substances over a wide range of temperatures and in various states of aggregation has been accomplished by the development of electroslag technology, which has achieved world recognition. On the basis of this technology, such productive processes have been created as electroslag remelting, casting, welding, and fusing and, in short, a new branch of industry has been created -- special electrometallurgy.

Bringing fundamental and applied research together and optimizing their relationship is one of the most important tasks of planning in the field of science. Applied research synthesizes information which comes both from fundamental sciences and from production and technology. It transforms and refines into applied knowledge that which becomes the direct basis for developing new technology and new organizational forms of production.

The traditional way of utilizing fundamental scientific research is to proceed through subsequent steps toward application , and then experimental and design development, experimental models, series production, and mass application. Today, there is another way of utilizing fundamental scientific research. It is applied in those cases where the accomplishment of large economic tasks dictates the necessity for the implementation and practical realization of concrete scientific-technical developments that require the conduct of serious fundamental research and applied research either in succession or in parallel. As a result, new scientific areas are being created which, as a rule, involve more than one economic sector and have great economic significance. This way often involves academy institutes such as the Institute of Electric Welding.

On the basis of applied science achievements, the new technology models are developed and their introduction into production is begun. During the development stage, science is directly united with technology and is embodied in it, and new engineering and technology are included in production. In the complex system of "science-technology-production," development is a very complicated and labor-consuming link, on which progress in the production of new types of products depends.

The time that it takes for discoveries and fundamental and applied research achievements to become the achievements of production is an important indication of the functional effectiveness of the "science-technology-production" system. Today, the objective tendency for shortening this period has already become quite evident. Therefore, the real necessity arises for finding new forms of relationships between science and production that can substantially hasten the practical embodiment of scientific ideas.

We have always thought that creating unified scientific-research, design-technological, and experimental-production complexes was an extremely important means for moving along the "science-technology-production" chain. The Institute of Electric Welding has a highly qualified staff and well-equipped research sections and laboratories, strong experimental design and technology bureaus, an experimental shop, and two experimental plants that manufacture welding and metallurgical equipment and welding materials. Only in this way can there be a high degree of development completion and a rapid realization of developments in production. For example, only a little over two years were required for the research, technology development, creation -- together with organizations of the Ministry of Construction of Petroleum and Gas Industry Enterprises -- and introduction of a complex of complicated K-700 machines and mechanisms for electrocontact welding of large-diameter gas pipelines under arctic conditions.

ORGANIZING THE INTRODUCTION OF TECHNOLOGY INTO PRODUCTION

For transferring new engineering and technology to the economy, the institute uses very diverse forms of relations with production. As early as the scientific research stage, we widely enlist, by direct economic agreements, the consumer enterprises where the results of the research and scientific-technical developments are scheduled to be implemented. Joint creative collectives are organized at the institute and at the enterprises. Mutual interest and responsibility raise the effectiveness of research and permit sharp reduction of the time required for introducing new technology. The subject matter of the agreements is closely tied with the scientific subject matter of the institute. As a rule, each subject is supported by one or more agreements. This permits the enlistment of financial, material, and labor resources of enterprises not only for the introduction of technology into production but also for doing theoretical research and experimentation.

To accomplish the introduction of new technology, specialists from the institute, scientific workers, designers, and technologists are sent to the enterprises. They participate in all stages of preparing and carrying out the process of absorbing new technology. Many years' experience has confirmed the high degree of effectiveness of such an organization for introducing technology into production.

Our institute confirmed the practice of having a scientist get involved in the introduction of his own ideas into production. This work is not reassigned to special sections for technology introduction which, by the way, the institute has long done without. Each author of a development knows that he is obliged to fight for its practical utilization. Scientists and producers become equal participants in a single process -- the creation and assimilation of new technology.

The institute has broad and close relations not only with production but also with scientific-research and design-technological organizations of the economic sectors. By direct economic agreements, the institute develops complex scientific subject matter relating to the creation of new technological processes, equipment, and unique industrial units.

About a thousand enterprises and organizations in the country systematically receive scientific information, technical documentation, or actual aid from us in the introduction and mass assimilation of new welding techniques and technology. Every year, the institute, jointly with industrial enterprises, introduces into production more than sixty finished developments and about a hundred developments undergo experimental-industrial testing at various enterprises. In addition, our collective transfers its scientific-technical achievements to fifty enterprises each year and provides aid in their assimilation.

institute projects that are being introduced into the economy stand out because of their high economic effectiveness. Thus, during the years of the 10th Five-Year Plan, over three hundred scientific developments were successfully introduced into production and, from the broad utilization of these, the economy received an economic effect of 812 million rubles. The coefficient of return on each ruble expended, considering the share of participation by the institute, was over seven rubles on the average for the five-year plan.

THE COORDINATION OF EFFORT

Over twenty years ago, an experiment began when, for the first time, management of the development of welding sciences and techniques and also inter-sector welding production was assigned by the government to an academy institute -- the Institute of Electric Welding. It was designated the head institute in this field in the country. A new system of collegial management was devised for fulfillment of the assigned difficult and responsible functions.

The institute has a coordination council on welding from among the more well-known specialists, scientists, and producers. Jointly with the Scientific Council on the Problem of Welding of the USSR State Committee for Science and Technology, it coordinates the activities of scientific-research institutes, planning-design and technological institutes, design bureaus, and civil design-technological bureaus of all the ministries that are doing work in the field of welding, and prepares plans for the most important scientific research and experimental design work in this field. Scientifically founded forecasts have been made systematically with respect to the development of welding science and technology and welding production for a period of 15 to 20 years and, on the basis of these forecasts, drafts are developed for state complex programs for the five-year period being planned, which are approved by the USSR Council of Ministers.

Four programs have been fulfilled already and a fifth has been adopted. For new large problems that arise during five-year periods, special-purpose programs and their solutions are developed and submitted to the government for approval. Complex and special-purpose programs are considered in putting together the five-year and yearly plans for economic and social development. The institute, with the enlistment of the coordination council, regularly checks the progress of fulfillment of programs and plans and annually prepares appropriate surveys and proposals. A capable, well-supported, inter-sector complex for the solution of varied problems in welding technology has come about. It includes a broad, modern scientific-technical base and a wide network of planning-design and technological organizations. In it there are more than seventeen thousand industrial enterprises and construction organizations that do welding and fusing and tens of specialized factories and factories enlisted in the manufacture of welding materials.

Thus, scientific and production collectives act as equal participants in a single process of creating and assimilating new engineering and technology. Their purposeful and concentrated activity within the framework of concrete programs at various levels is today a real form of relationship between science and production. Groups for the introduction of new technology at enterprises and special commissions for influencing scientific-technical progress under party and Soviet bodies have acquired great significance in strengthening creative contacts.

It can be asserted that the experiment that began over twenty years ago has been a success. The experience that has been accumulated can be usefully disseminated also to other inter-sector types of production with their appropriate ministerial and academy institutes and design bureaus.

The institute also widely practices such forms of organizing joint work with economic ministries as complex plans for scientific research and introduction of new technology. For example, we are now working on such a plan with the UkSSR Ministry of Ferrous Metallurgy and the UkSSR Ministry of Power and Electrification. Research and development are also being done on complex scientific-technical programs of interest to large individual enterprises and production associations of the country -- "ZIL," "Electrostal'tyazhmash," "Motorostroitel'," "Tsellyulozmash," and others. Specialized scientific-research laboratories have been organized at the institute for the chemical and machine-tool industries, and also for Ukrainian ferrous metallurgy.

In its future activities, the institute will continue the search for new ways to strengthen relations between science and production, will concentrate its efforts on fulfilling the most important tasks in the development of the economy, and will make a worthwhile contribution to accomplishing the tasks put before the party and the country by the 26th CPSU Congress.

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PARTY SCIENCE CHIEF DESCRIBES ADMINISTRATION OF R&D IN UKRAINE

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA in Russian No 3, 1981 pp 3-15

[Article by F. M. Rudich, chief of the department for science and educational institutions of the Ukrainian Communist Party Central Committee, Kiev: "Experience in the Control of Scientific-Technical Progress in the Ukrainian SSR"]

[Text]/A complex program for the development of science and the acceleration of technical progress was set forth in the Basic Directions for the Economic and Social Development of the USSR for 1981-1985 and for the Period to 1990, which was adopted at the 26th CPSU Congress. The development of science and engineering should be subordinated in still greater measure to the solution of the most important problems in the further progress of Soviet society and the rapid transition of the economy to the path of intensive development. Great measures are foreseen for improvement in the system for controlling technical progress, including the development and implementation of special-purpose complex programs for the solution of the most important scientific-technical problems, the strengthening of mutual ties between science and production, and timely determination and modification of the direction of research and development and the organizational structure of scientific institutions, and so forth/ [in boldface].

/The tasks brought out at the congress were formulated with consideration for the experience, including that of the Ukraine, accumulated in recent years with respect to controlling scientific-technical progress. The study and development of this experience will help in the fulfillment of the decisions of the 26th CPSU Congress/ [in boldface].

The broad network of Ukrainian research institutions includes 190 thousand scientific workers, among whom 4.8 thousand are doctors of sciences and 56 thousand are candidates of sciences.

The leading scientific organization is the UkSSR Academy of Sciences. In its scientific institutions, there is a whole army of scientific associates, including 350 academicians and corresponding-members, over a thousand doctors of sciences, and 6.8 thousand candidates of sciences. After the 25th CPSU Congress, the CPSU Central Committee twice addressed itself to the work experience of the UkSSR Academy of Sciences and recommended it for broad dissemination.

The Ukrainian Communist Party Central Committee and the UkSSR Council of Ministers adopted a decree on certain measures for further improvement in the control of scientific-technical progress in the republic. The implementation of the measures provided for in this decree have aided the development of a more effective mechanism and an integrated system of organization for the utilization of scientific-technical achievements on a republic scale. There has been a significant increase in the role and influence of UkSSR Gosplan as the organization responsible for scientific-technical progress and as an active participant in its practical control. General management of republic ministries and agencies in utilizing the achievements of scientific-technical progress in the economy has been entrusted to a deputy chairman of the UkSSR Council of Ministers who also heads a commission on these questions under the UkSSR Council of Ministers Presidium. A Republic Council for the Coordination of the Natural and Social Sciences, headed by the president of the UkSSR Academy of Sciences, has been created. All research plans are confirmed by ministries and agencies only after agreement by the council.

Seventy-nine republic scientific-technical programs have been formulated and are being successfully implemented. In 35 ministries and agencies, programs have been drawn up for the first time and are being fulfilled to raise the level of mechanization and automation of all productive processes.

Nevertheless, scientific-technical potential is still not being utilized fully, and the rate and scale of introducing scientific developments into production still do not satisfy us. In connection with this, persistent work is being conducted in the republic on intensifying and accelerating scientific-technical progress and on increasing its effectiveness.

DETERMINING THE GENERAL STRATEGY OF RESEARCH

Proceeding from the national plan for scientific work defined by the USSR Academy of Sciences and the USSR State Committee for Science and Technology, the republic academy is concentrating available efforts and resources on those areas in which its institutes are or can be leaders in the country in the shortest time. Such an approach has permitted progress to the forefront of scientific research and the strengthening of ties with practice. In doing this, it is apparent, the opportunity is not excluded for opening new areas dictated by the logic of scientific development or the needs of the economy.

The results of fundamental research fulfilled in the UkSSR Academy of Sciences in creative cooperation with scientists of the USSR Academy of Sciences and other academies of sciences, has permitted the creation of over 300 new technological processes. Their introduction has raised the level of mechanization and automation of production, has reduced the volume of materials used, and has improved the quality and durability of products and labor and environmental conditions.

A striking example is the work of the Institute of Electric Welding imeni Y. E. Paton of the UkSSR Academy of Sciences. World recognition has been achieved by the technology for electroslag remelting, which started a whole new branch of industry -- special electrometallurgy. I must mention also the technology for producing laminated pipe and the welding of large-diameter pipelines. Laminated pipe being produced by the Khartsyzsk Pipe Plant permits an increase in gas pipeline pressure from 70 to 120 atmospheres and, at the same time, sharply increases their carrying capacity. The use of this pipe will make it possible to build only three strings of gas pipelines instead of seven that would otherwise be necessary to carry gas from Siberia to the European part of the USSR. It is becoming no longer necessary to use expensive vanadium steel and controlled rolled metal. The technology for welding large-diameter pipe is being realized with assistance from the Sever-1 complex, which is working successfully in the conditions of the Far North, welding 6 to 8 pieces an hour and raising labor productivity by a factor of 8. Each such installation provides an economic effect of 800 thousand rubles per year.

THE SEARCH FOR NEW FORMS OF ORGANIZATION FOR MUTUAL INTERACTION BETWEEN SCIENCE AND PRODUCTION

Pertinent to this are joint complex plans of research and introduction into production, approved by the presidium of the UkSSR Academy of Sciences and the boards of appropriate ministries, on the scale of an economic sector. There are now 16 such plans at the academy-ministry level whereas, at the beginning of the 10th Five-Year Plan, there were only 5. A similar approach to the organization of cooperation is being applied by the UkSSR Ministry of Higher and Secondary Specialized Education and by other ministries and agencies.

Also of interest are the complex scientific-technical programs being carried out for large production associations and enterprises. Initiators have been the scientific institutions of the UkSSR Academy of Sciences jointly with the "AvtoZIL" association. In these programs, concrete time periods have been determined and an efficient sequence for work fulfillment -- from scientific-research developments to the production of motor vehicles -- has been provided for. Cooperation of scientists and producers under such programs is receiving wide acceptance in the republic.

The urge to accomplish all research and development within the framework of programs leads to violation of the principle of their primacy of resource allocations. It seems that the number of programs at all levels (state, regional, economic sector, and ministerial) must be limited and only the basic questions relating to raising the effectiveness of civil production must be solved within their framework.

At the present time, state organizations and scientific institutions have been oriented by the Ukrainian Communist Party Central Committee toward formulating a system of scientific-technical programs for the 11th Five-Year Plan. It has been proposed that republic interagency scientific-technical programs be created and directed toward improving the technical bases of the energy complex and the metallurgical industry, toward increasing the effectiveness of agricultural production, toward the utilization of labor resources, and toward other things. To develop these programs, expert groups of leading scientists and specialists have been organized; it is proposed that in due course these groups be transformed into expert councils to manage the implementation of these programs. Work is also in progress on creating regional programs within economic sectors and also programs within the interests of individual associations and enterprises. In prospect is the creation of an effective system of programs and control over their implementation; this system must provide not only for planning scientific research which, in the republic as well as in the country as a whole, is not being accomplished on a sufficiently high level, but also for the rapid utilization of program results in practice.

THE UTILIZATION OF NEW FORMS OF RESEARCH ORGANIZATION THAT PROMOTE EFFECTIVENESS IN SCIENTIFIC RESEARCH

The utilization of scientific achievements is accelerated in the presence of a definite correlation between the number of scientists and the number of designers and technologists who work on the embodiment of scientific ideas in new machines and technologies. Unfortunately, the predominance of the latter group over the former is not always maintained.

The republic Academy of Sciences started the creation of powerful scientific-technical associations. In the scientific-technical complex of the Institute of Electric Welding there are more than 7 thousand people, and it includes a scientific-research institute and subordinate units operating on a cost-accounting basis, an experimental design bureau, an experimental shop, and two experimental factories. Here, there is not only continuity of transition from the origin of a scientific idea to the preparation of an experimental model, but conditions are created for substantially raising the level of fundamental research and providing high technical support to experimentation. Similar associations are also operating on the basis of the Kiev academy institutes of superhard materials and problems of materials sciences; the formation of associations is being completed on the basis of the Institute of Cybernetics, the Khar'kov institute of radio physics and electronics and the physico-technical institute of low temperatures, the L'vov physico-mechanical institute, and the Donetsk physico-technical institute.

A number of organizational and legal difficulties have arisen in connection with the formation of associations; these relate to the various sources of financing and the wage systems of the organizations forming the association that have their own administration, accounting, supply, and personnel sections, etc. The traditional system for procuring materials and supplies does not answer the needs of the large new experimental shops and factories. It has turned out to be essentially impossible in practice to apply a policy on scientific-production associations to academy institutions. Competent national bodies will have to find a solution to these problems.

THE EFFECTS OF "SCIENCE-PRODUCTION" RELATIONS; THE ROLE OF PARTY ORGANIZATIONS

The activities of the scientific collectives of the UkSSR Academy of Sciences have shown a marked influence on accelerating the rates of scientific-technical progress. Whereas in the 8th Five-Year Plan 1280 developments were introduced into the economy with an economic effect of about 450 million rubles, more than 2700 completed developments were introduced during the 9th Five-Year Plan with an economic effect of over 1 billion rubles. For each ruble invested in applied developments, there was a return of over 5 rubles.

The present stage of the scientific-technical revolution requires a substantial deepening of relations between science and production. Therefore, republic party organizations give a large amount of attention to the development of creative cooperation between scientific and production collectives. Thus, the Ukrainian Communist

Party Central Committee at the beginning of the 10th Five-Year Plan approved the initiative of the collectives of the Institute of Electric Welding and the "Zhdanovtyazhmash" production association, which set up competition under the motto, "The union of science and production for a five-year plan of effectiveness and quality." The socialist obligations of the two collectives contained a complex work program directed toward raising the technical level of production and the development and introduction of progressive technological processes. These obligations are being fulfilled successfully. The party committees of the Institute of Electric Welding and the "Zhdanovtyazhmash" association, using well-known forms of cooperation -- joint meetings, scientific-practical conferences, seminars, complex teams for operational solution of problems, and so forth -- created conditions of high responsibility and expectation in the fulfillment of the planned program.

During the years of the 10th Five-Year Plan the association jointly with the institute introduced scientific developments with a yearly economic effect of about 3.5 million rubles and saved 2.6 thousand tons of rolled metal; the labor productivity of welding production in the association rose by 22 percent. As a result, a number of scientific-technical problems were successfully solved.

A large social effect was achieved also. New organizational forms arose for managing scientific research and the introduction of its results into practice.

A system of nongovernmental bodies for managing scientific-technical progress has been formed in Kiev. A series of commissions operates under the management of a council for the acceleration of scientific-technical progress of the Kiev party gorkom. Some of these are specialized in relatively narrow technological areas: metal casting, application of superhard materials, metal welding, and utilization of computer technology. Others are oriented toward economic sectors. More than 500 scientists and specialists are engaged in the commissions and councils. The social consequences of this process are of great importance: here scientists, engineering-technical workers, and workers jointly solve the problems of managing scientific-technical progress, and for them this work is a form of civic activity. A number of educational-scientific production associations have been created to solve the technical problems of individual enterprises and to raise the quality of specialist training; the work of these associations is also directed by a council for support to scientific-technical progress. As a result, the process of technical revitalization of enterprises has been significantly activated in Kiev, and some of them have advanced to the leading edge in their sectors.

Interesting experience in the creation of nongovernmental bodies for managing scientific-technical progress on a regional scale has been accumulated by the L'vov party obkom and the Western Scientific Center of the UkSSR Academy of Sciences. An original mechanism for management has been established within the framework of the so-called interagency special-purpose scientific-production associations, which are being created on a contractual basis by the organizations participating in the work and are affirmed by the respective ministries, agencies, and obkom bureaus of the party. The scientific-technical council of such an association fulfills an operational function in managing the implementation of a special-purpose program. This permits the practical elimination of the gap between development and introduction into production and, in many instances, it brings them together. In addition, the interagency association conducts a large amount of work on raising the qualifications of engineering personnel at enterprises and in attracting them to participate in scientific research.

The effectiveness of this organizational form has been confirmed, for example, by the activity of the interagency special-purpose scientific-production association created to implement the program "The Quality of Electronic Beam Instruments" for the "Kineskop" production association. As a result of the work done, for example, with the 59 LKZU kinescope, the brightness was increased by a factor of 5, the contrast by a factor of 3, and the length of service by a factor of 4. Through the joint efforts of scientists and producers, a first line of automatic quality-control systems for products has been created and introduced.

To coordinate and direct the work on the formulation and implementation of new programs, the L'vov party obkom and the bureau of the Western Scientific Center of the UkSSR Academy of Sciences have created interagency scientific-production complexes. Each of them controls several interagency associations in closely related fields. The management body of a complex is the board, headed by an important scientist; his deputy, as a rule, is the chief or deputy chief of the appropriate section of the party obkom. The structure and composition of the managing bodies of four interagency scientific-production complexes have been approved: instrument making, machine building, geology-geophysics, and agriculture.

Great efforts are involved in the work of these bodies. Just the direct performers of the work being done within the framework of special-purpose programs today include over 1500 scientists and industrial specialists. Trade-union organizations and oblast councils of scientific-technical societies and councils of young researchers and specialists are being actively involved in the work of interagency complexes and associations by the Western Scientific Center of the UkSSR Academy of Sciences with support from the L'vov party obkom.

An increasing role is being played by the primary party organizations of scientific institutions and enterprises in the acceleration of scientific-technical progress. The party bureaus of institutes and enterprises regularly control the work of communists who head commissions, complexes, and associations. Contacts are being set up between the party organizations of scientific-research institutes and those of industrial enterprises. Also, multilateral contacts are being formed, and joint measures are being developed for successful fulfillment of special-purpose programs, etc.

It is also worth noting that activity that might seem essentially "external" in relation to an academy institute has a marked influence on the intra-institutional life, on the organization of scientific research, and on its end results. For example, in the Physico-Mechanical Institute of the UkSSR Academy of Sciences, work directed toward the fulfillment of the special-purpose programs of the interagency machine-building complex makes necessary the introduction of continuous subject-planning, which efficiently regulates participation by subunits of the institution and its fulfillment by various stages. A number of scientists at this institution, and also at the Institute of Applied Problems of Mechanics and Mathematics of the UkSSR Academy of Sciences have published monographs and have defended dissertations that simply never would have appeared without cooperation with production. Thus, in L'vov as in Kiev, bodies for controlling scientific-technical progress within the boundaries of cities and oblasts have been created, essentially on a nongovernmental basis under the management of party committees. Without disrupting the vertical administrative subordination of institutions and enterprises, they have organized very effective horizontal scientific-technical relations and they are becoming key operational factors for combining control on a regional basis with control on the basis of economic sectors.

Much is being done on these lines by councils of the Dnepropetrovsk, Donetsk, Khar'kov, and Southern Scientific Centers of the UkSSR Academy of Sciences. The scientific centers are becoming bodies for interagency coordination, which work under the aegis of the Academy and rely on its scientific authority.

The activity of the scientific centers is actively supported and directed by the Ukrainian Communist Party Central Committee and by oblast party committees. An example of this is the agreement on scientific-technical cooperation between the UkSSR Academy of Sciences and enterprises and organizations of Donetskaya and Voroshilovgradskaya Oblasts. The Academy has accepted the obligation for conducting, according to the agreed-upon plan, joint developments in the most important scientific-technical problems of the coal and metallurgical industries, and enterprises and organizations of the Donbass are to create the necessary conditions for successful conduct of joint research and to do everything possible to facilitate the most rapid possible fabrication of experimental models of instruments and equipment, and to provide for the practical application of the results of scientific developments in the shortest time possible.

In the post-Congress period, leadership meetings have taken place in all Kiev scientific centers at which agreements have been adopted for the creative cooperation of scientists and producers.

NEW TASKS

One of the key areas of activity by party organizations is the development of the creative energy of scientists. In the store of means for raising the intensity of activity in scientific collectives and for deepening relations between science and production, an important place belongs to socialist competition . Competition in science is a delicate matter which does not tolerate cliches. In summing it up, it is necessary to combine, thoughtfully and creatively, qualitative and quantitative estimates of scientific work. At the same time, the problems that have to be solved here, in the final analysis, come to what was formulated by V. I. Lenin: provide for publicity, comparability of results, and dissemination of advanced experience.

As experience at the physico-technical institute (Donetsk), the physico-mechanical institute (Khar'kov) has shown, three groups of indicators are applied, as a rule, for the activity of a collective: scientific work, the utilization of its results in practice, and the civic awareness of the workers.

With the observance of general principles of organization of competition each scientific collective has its own peculiarities. Thus, in the Institute of Physics of the UkSSR Academy of Sciences, basic attention is given to the quality of scientific research, and competition in scientific work here has become an integral element. In the Council for the Development of the Productive Forces of the Ukraine, the basis for competition are the personal and collective creative plans of the workers, the results of the fulfillment of which are checked by civic organizations.

Further increase in the influence of socialist competition on the effectiveness of the work of scientific collectives depends on the solution of a number of problems. One of them is the development of criteria for comparing the ability to achieve results in the work of institutes in various fields. Preference is usually given to those scientific institutions in which the decisive role is played by the economic effectiveness of work being accomplished on scientific-technical subject matter. And this is rightful. But it is unjust when the activity of institutes in fields of fundamental research in natural and social sciences practically drop out of sight. It seems that these achievements should also be considered in determining the winners of socialist competition.

The second problem is the material stimulation for winners of socialist competition in institutes. There should be the possibility of utilizing material incentives as well as spiritual ones. Prizes for creating and mastering conceptually new types of engineering and technological processes could be paid out of the unified fund for the development of science and technology, since this is provided for by the measures for the further improvement in the economic mechanism.

Today, 11.3 thousand communists are working in the UkSSR Academy of Sciences. The party contingent among scientific workers constitutes 29 percent. Among academicians and corresponding-members, communists constitute over 78 percent, among doctors of sciences-- 70 percent, and among candidates of sciences -- 35 percent. All secretaries of party organizations of academy institutes are doctors and candidates of sciences. The composition of party committees and bureaus has been strengthened substantially. All this helps to increase the authority and strengthen the influence of party organizations.

One of the important questions in their activity is the selection and cultivation of young talents and the creation of new scientific schools and the strengthening of existing ones.

The efforts of party and state bodies, of collectives of scientific institutions, and of their party organizations are concentrated on the accomplishment of these and other tasks stated by the 26th CPSU Congress.

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MORE COORDINATION NEEDED IN REGIONAL S&T PROGRAMS

Moscow PRAVDA in Russian 21 Feb 81 p 3

[Article by Professor Yu. Kanygin, doctor of economic sciences, Kiev: "Facets of Experience: Complex Programs"]

[Text] During the past five-year plan, a significant amount of experience was accumulated in the development and implementation of special-purpose programs of a different type. Among them, regional scientific-technical problems of complex character, such as "Sibir'" and "Ural," have special significance. These are programs of a special class -- multipurpose -- that accomplish a large circle of tasks with complicated stru cture (they are divided into subprograms, each of which is complicated in itself). Tens and hundreds of implementing organizations subordinated to various agencies participate in fulfilling them. And the statement by Comrade L. I. Brezhnev on the necessity of having specific bodies bear full responsibility within the framework of a program acquires even greater significance in this case.

Let us address the subject of experience. In regions, a system of organizational support for scientific-technical programs is being formed and in many cases has already been put together. But it requires improvement. The "staff" function in managing programs, first of all, has been taken over by the presidiums of republic academies of sciences and of the Siberian Department of the USSR Academy of Sciences and by presidiums and bureaus of other regional science centers. Their participation in implementing large programs has provided a qualitative improvement in the life of scientific collectives.

Another aspect of experience: In the 10th Five-Year Plan, there was growth in the role of kray, oblast, and city party committees in the control of scientific-technical progress. A rather high degree of integration of effort by institutes and enterprises was achieved in a number of oblasts and large cities.

In Leningrad, Kiev, Minsk, Kuybyshev, L'vov, Dnepropetrovsk, and a number of other cities, the party obkoms and gorkoms have arranged the coordination of work by scientific, planning and design organizations, and enterprises for the acceleration of technical progress. Councils, special commissions, and part-time sections have been created under party obkoms and gorkoms to influence scientific-technical progress. For example, a council for the acceleration of scientific-technical progress under the Kiev party gorkom coordinates the activities of seventeen commissions with inter-sector orientation and five within individual sectors. In their composition are party workers, scientists, specialists, and enterprise managers. They organize the implementation of special-purpose scientific-technical programs within the city. In L'vov, interagency scientific-production complexes have been created for them.

However, the search must be continued in this direction. When the managing bodies of academies of sciences and of other scientific centers take on the role as the operational staff for organizing the implementation of complex scientific-technical programs on a regional level, the limitations of their capabilities becomes especially clear in the case of complex programs of inter-sector character. A scientific authority alone, as practice has shown, is not always enough to influence a large number of agencies whose organizations participate in the implementation of a program. Therefore, broadly thought-out and well-developed programs in terms of time-length, size, and quality of work are often not fully implemented. Research program "blocks" for which academy institutes are responsible proceed successfully. But insofar as transferring them to experimental and production "blocks," there is a growing counter-avalanche of agreements. The creation of new technology for 10 to 15 machines, systems, and devices often requires 300 to 400 agreements and "arrangements." The basic creative efforts of the institutes are diverted to this work.

It would not be very expedient to give the academies and regional centers the functions and control authority over the work of institutions under other agencies. As for local party bodies, they have broader functions and putting "staff" duties for concrete programs under them would just be a substitution for economic bodies by party bodies. Concerning councils and commissions for technical progress that operate under party obkoms and gorkoms, they are created outside the governmental structure and, naturally, have no administrative rights.

Local Councils [of People's Deputies]? They could manage relatively small programs of primarily local significance. But as for complex special-purpose programs for solving the most important scientific-technical problems, well, hardly.

In my view, it would be useful to think about creating regional administrations of the USSR State Committee for Science and Technology in the most important regional industrial centers and certain large cities of the country. They could take over local "staff" functions.

In the regions, of course, there are bodies responsible for technical progress. The proposed administrations do not need to replace them at all. They will not be responsible for technical progress in general, but for a concrete list of complex regional problems that are large in tasks and required resources and also complex scientific-technical programs for the solution of the basic problems of science, technology and production. The implementation, let us say, of programs related to preventing rivers in the Donbass from becoming shallow or to the protection of the environment in Sverdlovsk, must remain the prerogatives of local management bodies. But these bodies are not up to implementing programs of the "Sibir'" type. Here, administrations of an all-union superagency are needed.

The proposal for creating new management structures can engender concern that they will turn out to be superfluous. The apprehensions in this case are unsubstantiated. The work of interagency regional bodies has provided valuable experience which, it is true, pertains to large construction and economic programs. In Siberia, they are coordinating work on the construction of the Baykal-Amur Mainline, the exploitation of adjacent territory, and creation of the Ust'-Ilimsk Complexes. This valuable experience must be transferred to the area of organizing the management of complex scientific-technical programs.

In this connection, I propose that the following words be added to the appropriate paragraphs in Section III of the draft [by the CPSU Central Committee for the 26th CPSU Congress]: "to provide for measures for improvement in managing complex programs."

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GEORGIAN SCST CHAIRMAN DESCRIBES EFFORT TO APPLY SCIENCE TO INDUSTRY

Tbilisi ZARYA VOSTOKA in Russian 18 Mar 81 p 2

[Article by I. Gverdtsiteli, chairman of the Georgian SSR State Committee for Science and Technology, vice-president of the Georgian SSR Academy of Sciences, and delegate to the 26th CPSU Congress: "The Productive Force of Science: Notes of a Delegate to the 26th CPSU Congress"]

> [Text] The work of the 26th CPSU Congress took place in an atmosphere of efficiency, solidarity, and creativity, and we -- the delegates to the congress, our party, and all Soviet people -- perceive, as a document of enormous historical meaning, the report of the Central Committee presented by the general secretary of the CPSU Central Committee, Comrade L. I. Brezhnev -- a report which embodies wisdom and the lofty responsibility of the Leninist party for the destiny of the country, peace, and progress, a report which mobilizes the party and the people for the accomplishment of new tasks, and a report which opens inspiring prospects for communist creativity.
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> The author believes:
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> -- that it is advisable to accelerate the formation of centers for collective use of computer technology;
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> -- that a centralized fund must be created for financing the most important research projects and developments; and
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> -- that the production opportunities for scientific research institutes must be significantly expanded for the development and fabrication of experimental models of technical items.

With each five-year plan, our tasks are becoming larger and more complicated. The conditions of the 1980's, in which the economy of the country will be developing, make the acceleration of scientific-technical progress even more urgent. "The country has an extreme need for the efforts of 'big science,' along with the development of theoretical problems, to be concentrated in large measure on the solution of key economic problems and on discoveries that can bring genuine revolutionary changes in production," stressed Comrade L. I. Brezhnev at the 26th CPSU Congress.

The contribution of "big science" to the accomplishment of today's economic tasks is quite large. It is not accidental that, in a warm and cordial letter to the Georgian workers in connection with the fulfillment of the five-year plan by the republic, Comrade Leonid Il'ich Brezhnev stressed the important role of scientists in this glorious labor victory. High praise was also given their activity by the 26th Georgian Communist Party Congress. All of this is convincing evidence that the scientific potential of the republic is increasing and is actively assisting in the revitalization of the economy.

The concentration of scientific efforts on the most long-range and important areas in recent years has led to special-purpose complex programs. At the present time in Georgia, over 20 complex and scientific-technical programs are being fulfilled; each of them unites from five to twenty organizations. The special-purpose-program method makes it possible to coordinate and direct the activities of scientific-research institutes and industrial enterprises of both republic and union subordination and it aids in creating conditions for the accomplishment of the most important scientific-technical tasks; it is especially effective when the problem being worked on affects several economic sectors.

What this promises for the future can be judged by the example of a program for the development of the electronics industry. Scientists from ministerial and academy institutes -- cybernetics, metallurgy, laboratories of Tbilisi State University and the Georgian Polytechnical Institute imeni V. I. Lenin, and others -- jointly are developing new highly effective semiconductor devices and microcircuits.

Roughly analogous is the "Kurorty" program, which is managed by the Institute of Health Resort Study of the republic Ministry of Health. In accord with this program, 21 organizations of various ministries and agencies have fulfilled several dozen scientific-research projects. The purpose of the joint work is to create the first health-resort atlas of Georgia in the history of the republic: on this basis, the preparation of recommendations for the long-term development of the health-resort business and tourism has been achieved.

The resources of the "Borzhomi" mineral-water deposits have been determined, and recommendations have been given for its rational exploitation; the physical-chemical and curative properties have been studied, and also the output rate of the new "Mitarbi" mineral water. Others, including carbonated and siliceous mineral waters, are also continuing to be studied. The complex study of the Gagra-Pitsunda-Avadkharskiy resort area has been completed, with a definition of new health-resort resources. Recommendations have been developed for the preservation of natural curative regions and a rational use plan has been developed for the seashore zone of the Black Sea coastal region.

Fulfillment of the "Izotopy" program is making it possible to intensify research in biology, medicine, agriculture, and other fields.

The use of the program method of scientific research in 1980 permitted the achievements of a number of important results. For example, at the industrial metallurgical facility of the Madneul'skiy mining-enrichment combine, technology was developed and proven for hydrogen deposition on copper powder, permitting the regulation within broad limits of the sizes and shapes of particles and the achievement of ultra-dispersion of powder with a high degree of purity, possessing new physical-mechanical properties and providing a powder-metallurgy method for producing various special items. Complex hydrometallurgical processing permits, at the same time, the obtaining of scarce electrolytic dioxide of manganese -- a material necessary for the production of high-quality current sources. A hydrometallurgical means has also been developed for obtaining a number of powders -- nonferrous metal alloys and others.

Recently, the introduction of scientific achievements into economic practice has been accomplished with more purposefulness in Georgia. This has been aided largely by the development of completed scientific-research and design projects having economic significance for introduction at enterprises in the republic. In all, 37 measures were included in the plan.

To intensify scientific research to the maximum degree: this is the requirement posed at the 26th CPSU Congress and the 26th Georgian Communist Party Congress. The creation of centers for collective utilization of unique equipment opens up great opportunities for accomplishing the assigned tasks. Several such centers are already operating in the republic: an electron microscope for solids and x-ray structural analysis, a spectroscope for nuclear magnetic resonance, and others. In response to orders from scientific-research institutes, the centers make measurements and aid in interpreting achieved results for all organizations in the republic, regardless of administrative subordination. Practice shows that the centers permit significantly better utilization of instruments and provide highly qualified service. Here also is conducted work necessary for raising the qualifications of associates of various organizations and for the training of students from higher educational institutions. The growing demand for computer utilization is leading to the necessity for creating a republic network of computer centers based on the joint use of computer centers. This will provide for the transition from agency use of computers to collective use.

Georgian science today has been given a responsible task: the creation of a "RASU" republic automated control system for the economy, as a link in the "OGAS" national state automated control system. In fulfilling this task, we are proceeding by stages. In the first stage of creating RASU "Georgia," the first lines of automated systems for processing information for directive bodies (ASOIDO) of the Georgian SSR and of the Adzharskaya and Abkhazskaya ASSR's have been developed and are undergoing operational trials.

The first lines of republic automated control systems for science and technology (RASUNT) and scientific-technical information (RASNTI) have been put into operation.

An example of successful accomplishment of the task of optimum control has been the "Rtveli" program. Three years of experience in conducting grape harvesting in the Telavi region with the aid of the "Rtveli" automated control system and its functioning in the Kakheti region in 1980 has demonstrated convincingly the effectiveness of applying new organizational forms and methods of control that provide for the achievement of high economic results with minimum expenses. It is significant that the utilization of the system yielded not only good technical-economic indicators but also a high social effect.

Broad introduction of modern computer technology and automated control systems into the economy and the intensification of scientific research require a new creative approach to the accomplishment of economic and social tasks in the area of planning and control. These requirements have been stressed with special force at communist forums around the country and in our republic. The accomplishment of the assigned tasks will be aided in large measure by the clear and concrete proposals being developed by Gosplan, the State Committee for Science and Technology, and the presidium of the republic Academy of Sciences. We expect much from the activity of the Institute for the Control of the Economy, created in Georgia with the purpose of training management personnel under conditions of a functioning RASU "Georgia."

There is still another condition for improving the control of scientific-technical progress: the formation of a centralized reserve of financial means allowing the assignment of high priority to the most important research and development. The way to do this has been prescribed by the decree of the CPSU Central Committee and the USSR Council of Ministers on the further improvement of the economic mechanism. The creation of special funds to stimulate the development of scientific organization will have great significance.

An active search for new forms for organizing scientific research is now being conducted and the prerequisites are being created for further improvement in the control over scientific-technical progress. Measures are being adopted for the expansion of design and production opportunities for scientific-research institutes for the development and fabrication of experimental models of instruments and tools, done at an inventive level. A republic-wide experimental-design base has been created at the Special Design Bureau for Scientific Instrument Making of the Georgian Academy of Sciences. However, not always and not everywhere is an innovation carried through successfully to the level necessary for introduction into production. "The decisive and most urgent area today is in the introduction of scientific discoveries and inventions into practice. Scientific-research and engineering-design must be brought closer -- economically and organizationally -- to production," noted Comrade L. I. Brezhnev, speaking at the 26th CPSU Congress. One of the concrete reasons for slow assimilation of technical innovations is the weakness of some experimental design subunits of the republic and the absence of close contacts with production. The construction of semi-industrial facilities and experimental sections directly at plants can provide a way out of this. Thus, at the Georgian Polytechnical Institute imeni V. I. Lenin, a way was found to prepare alloys without tungsten or with small quantities of it. At the Rustavi Metallurgical Plant has appeared an experimental-industrial section for the manufacture of non-tungsten alloys for draw-plates being used for drawing out pipe. The cost of draw-plates has risen by a factor of 2.5.

Thus, Rustavi metallurgists have taken the initiative and have helped scientists introduce an important development and, in doing this, they have received a large effect on production. It is just because of this that it is so important to follow the Rustavi example and to organize experimental sections at enterprises jointly with scientific organizations and more broadly and boldly. This will permit accelerating the introduction of new technological processes into practice and will strengthen the research base for science.

In the 11th Five-Year Plan as determined by the Basic Directions for the Economic and Social Development of the USSR for 1981-1985 and for the Period to 1990, the development of science and technology should be subordinated in greater measure to the accomplishment of the economic and social tasks of Soviet society, the acceleration of the transition of the economy to the path of intensive development, and the increase of effectiveness of civil production. The complexity of the problems coming up require the establishment of a consistent policy for improving the control of science.

The development of new organizational forms of control over science will aid the mutual blending of science and production and still greater concentration of the efforts of scientists and producers and workers in planning bodies and ministries on the solution of the most important scientific-technical problems and the most rapid progress of new ideas toward all goals -- from invention to mass production, and to put a hoped-for damper on the manufacture of outdated products, that is, from the profound party positions, it will permit approaching the implementation of the party demands defined by the 26th CPSU Congress and the 26th Georgian Communist Party Congress.

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NEW SCIENTIFIC CENTER TO BE ORGANIZED IN CENTRAL KAZAKHSTAN

Alma-Ata VESTNIK AKADEMII NAUK KAZAKHSKOY SSR in Russian No 3, Mar 81 pp 12-21

[Report of a meeting of the presidium of the Kazakh SSR Academy of Sciences: "On Prospects for the Development of Scientific Research in Central Kazakhstan"]

[Text] On 18 December 1980 in Karaganda there was a visiting session of the presidium of the KaSSR Academy of Sciences jointly with the bureau of the Karaganda obkom of the Kazakhstan Communist Party and the Karaganda ispolkom of the oblast Council of People's Deputies. Responsible workers of the party gorkom and managers of Karaganda enterprises and institutions also participated in the meeting.

At the joint meeting, the question of prospects for the development of scientific research in Central Kazakhstan was discussed. Introductory remarks were presented by A. M. Kunayev, president of the KaSSR Academy of Sciences, corresponding member of the USSR Academy of Sciences, and academician of the KaSSR Academy of Sciences.

The speaker noted that the KaSSR Academy of Sciences, being guided by the decision of the 25th CPSU Congress and the 14th Kazakhstan Communist Party Congress, is conducting certain work for the development of fundamental and applied research applicable to the needs of industry and agriculture in the republic, to the strengthening of creative relations between science and production, and to the cooperation in efforts and resources for the solution of the most important problems of the economy.

During the years of the 10th Five-Year Plan, the Academy of Sciences significantly strengthened relations with production through the development of complex programs, programs for the development of individual regions, and plans for joint scientific research projects and for introduction of new technology into production, together with institutions and enterprises of interested ministries and agencies. One of the basic objectives of research by the scientific institutions of the KaSSR Academy of Sciences is Central Kazakhstan (Karagandinskaya Oblast), with its very rich mineral resources, large heavy-industry enterprises, and developed agriculture.

The CPSU Central Committee draft for the 26th CPSU Congress, "Basic Directions for the Economic and Social Development of the USSR for 1981-1985 and for the Period to 1990," provides for the intensive development of this region and, consequently, opens broad opportunities for research in the fields of geology, hydrogeology, mining, ferrous and nonferrous metallurgy, organic chemistry and coal chemistry, catalysis, biology, economics, and other branches of science.

The implementation of the tasks facing this region has been accomplished heretofore by the various scientific, design, and production organizations of Central Kazakhstan and also by a number of scientific institutions of the KaSSR Academy of Sciences. However, in the conduct of this work, there has been an absence of necessary coordination, which has led to the arbitrary selection of research areas, to insufficient utilization of the results achieved, and uncoordinated efforts among scientists for the solution of the most urgent problems.

Taking this situation into account, the Kazakhstan Communist Party Central Committee and the KaSSR Council of Ministers issued their decree of 15 April 1980, "On Measures for Strengthening the Supply and Equipment Base of the KaSSR Academy of Sciences for the Further Improvement in the Effectiveness of Scientific Research." This decree provided for the organization, during the 11th Five-Year Plan, of a number of new scientific institutions under the KaSSR Academy of Sciences in various areas of the republic, including the city of Karaganda.

With the aims of intensively developing scientific research in this region and of strengthening the interaction between science and production, it is intended to organize, between 1981 and 1985, a Karaganda Scientific Center of the KaSSR Academy of Sciences. Its structure will include the scientific institutions that already exist in Karaganda as well as newly created ones -- an Institute of Organic Synthesis and Coal Chemistry (based on the Metallurgical Chemistry Institute of the KaSSR Academy of Sciences) and sections of the Labor Red Banner Institute of Geological Sciences imeni K. I. Satpayev, the Institute of Mining, and the Institute of Economics.

The development of fundamental scientific research now being planned will provide a scientific basis for the development of leading branches of industry, agriculture, and also for social-economic problems. In the final analysis, this will permit supplying our industry with scarce raw materials and a fuel-energy base. Karagandinskaya Oblast already has an appropriate basis for their development.

In conclusion, A. M. Kunayev noted that the present joint meeting should listen to the proposals for the organization of the Karaganda Scientific Center of the KaSSR Academy of Sciences and make a decision.

During the discussion of the question of organizing new scientific institutions in Karaganda, all of the speakers unanimously noted the timeliness and value of the adopted decree and introduced their own proposals.

A. S. Saginov, rector of the Karaganda Polytechnical Institute and an academician of the KaSSR Academy of Sciences, stressed that the advantageous geographical position of Karaganda in the center of Kazakhstan, where the basic raw material bases for the development of the coal, metallurgical, chemical, and mining industries are concentrated, and the presence of an appropriate scientific potential are favorable to creating a large academy science center for the complex solution of the most important economic problems of a fundamental character.

For the Karaganda Basin, in A. S. Saginov's opinion, it is necessary to solve a number of problems, particularly to find new methods of synthesizing optimum technical mine set-ups for rational planning of mine work; to develop fundamental theoretical research in the field of mining geomechanics and gas dynamics and to develop scientific bases for purposeful changes in the physical and mechanical characteristics of mountain ranges; to continue research on physical-chemical, nonventilated, and nonmining means for extracting coal and on the replacement of people by robots and manipulators; to develop the means for complex mechanization and automation of productive processes for the preparation and excavation of all coal beds; to find technical solutions for opening up and preparing and devising systems for developing coal deposits at great depths; to develop, for the effective operation of the mines of the basin during the 11th and 12th Five-Year Plans, the scientific-technical bases for complex and optimum utilization of mining reserves; to develop, for the Ekibastuz deposit, the theoretical bases for complex utilization of raw materials (coal, aluminum oxide, and certain kinds of ore dumps and slags) and recultivation and environmental protection.

The effectiveness of the solution of the above-mentioned fundamental problems, noted A. S. Saginov, will be significantly greater if they are solved by academy institutes of both the republic and the Union.

The basic scientific areas of the Metallurgical Chemistry Institute of the KaSSR Academy of Sciences for 1981-1985 in metallurgy and chemistry were discussed by the director of the institute and candidate of engineering sciences, D. N. Abishev.

The economics of Central Kazakhstan challenges scientists with a number of scientific-technical problems, on the solution of which depend prospects for the development of the many economic sectors of the region. In first priority, solution is required for problems in the effective exploitation of mineral resources and environmental protection; complex processing of mineral raw materials and wastes of the mining, metallurgical, and chemical industries; the rational use of coal in metallurgy, chemistry, and power; the intensification of agricultural production; and the social-economic development of productive forces. The collectives of a large number of scientific-research institutions and higher educational institutions are now working on the accomplishment of these tasks. Just in Karaganda, there are 56 doctors of sciences and about 1100 candidates of sciences on the staffs of 16 scientific-research institutions and 7 higher educational institutions. A significant scientific potential is concentrated in the scientific-research institutes and higher educational institutions of Pavlodar, Tselinograd, and Dzhezkazgan.

Further, D. N. Abishev characterized the research done by the Metallurgical Chemistry Institute on the complex utilization of metallurgical and chemical raw materials of Kazakhstan. The institute is the head coordinating organization in the republic for solving the problems of rational utilization of brown iron ores; the work is being conducted according to complex special-purpose programs of the KaSSR Academy of Sciences and the USSR Ministry of Ferrous Metallurgy, "Metallurgical Processing of Phosphorous Ores of the Lisakovskoye Deposit," which unites the efforts of over 20 scientific research institutions and industrial enterprises. Within the framework of this program, the physical and chemical properties of the natural ores and various types of concentrates have been studied, and theoretical bases for nonwaste technology for their rational and effective utilization have been developed. Partial realization of several stages of this development at the Karaganda Metallurgical Combine has permitted the achievement of economic effectiveness of about 15 million rubles. Methods for the rational processing of the various types of manganese ores in Kazakhstan have been studied theoretically and verified in practice. Of significant interest is the work of the institute in the field of physical-technical bases bases for metallurgical processes related to research on the mechanics of friable materials and the physics of combustion. In the field of nonferrous metallurgy, the institute has developed the theoretical bases of a new technology for complex, non-waste processing of sulphide ores that are difficult to enrich and materials that contain pyrites. Five international applications for patents in eight foreign capitalist countries have been submitted by the USSR State Committee for Discoveries and Inventions for annealing by pyrrhotinization, a new technological process that has no analogs.

In research at the institute, much attention has been given to improving technology for producing copper and its concomitants. One method in prospect is alkaline desilicification of copper ores and concentrates, which permits utilization of all components of the raw material, improvement in the products produced, simplification of the technology and reduction in the number of operations, and a significant increase in the productivity of metallurgical plants. The economic effectiveness, established by the KaSSR Ministry of Nonferrous Metallurgy, was 17.0 million rubles a year. The data obtained also have been used as a basis for planning the construction of an experimental-industrial shop at the Dzhezkazgan Mining-Metallurgical Combine.

Scientists at the institute have proposed effective processes for the drying and annealing of concentrates and the industrial products of nonferrous metallurgy in continuous-operation shaft furnaces. This project has yielded interesting results in connection with the processing of Dzhezkazgan concentrates. Drying them in a shaft furnace with a slanted grill was the only means that could be applied that would permit the assimilation of an oxygen converter complex at the Balkhash Mining-Metallurgical Combine, for which the collective of the combine and the institute were awarded a USSR State Prize. Shaft devices for drying and annealing various materials are being introduced successfully at enterprises of the nonferrous metallurgical and chemical industries.

In plans for the study of the physical-chemical bases for alkaline hydrometallurgy at the institute, broad research is being done on problems of oxidizing and reducing solutions of chalcogens and chalcogenides. A complex of projects devoted to the physical-chemical bases for metallurgical processes have been the basis for assigning the institute to conduct an All-Union Conference on the Chemistry and Technology of Chalcogens and Chalcogenides once every four years and a yearly All-Union seminar on "The Electrophysical Processes of Combustion."

Institute projects for utilizing wastes from the metallurgical and chemical production of Kazakhstan deserve attention.

As a result of projects that have been done, the theoretical bases of a number of metallurgical and chemical processes have been created, and recommendations for solving complex tasks having great economic significance have been submitted.

In the CPSU Central Committee draft for the 26th CPSU Congress, "On Basic Directions for the Economic and Social Development of the USSR for 1981-1985 and for the Period to 1990," a large amount of attention is given to the further growth of the productive forces of Central Kazakhstan -- the major industrial region of the republic. In this connection, the following must be considered the basic scientific areas of the Metallurgical Chemistry Institute of the KaSSR Academy of Sciences: physical-chemical research, the assessment of new deposits of useful minerals and expansion of the reserves of existing ones; the development of scientific bases for new technology for complex utilization of mineral raw materials and of wastes from mining, metallurgical, and power industries, with a rise in the level of extraction and thorough utilization of primary and concomitant elements; intensification and reduction in the amount of metal used in existing processes in ferrous and nonferrous metallurgy and the development of new economic methods for their control.

At the same time, Central Kazakhstan also has a rich raw material base for the development of the chemical industry; billions of tons of low-energy coal are concentrated in the region; tens of thousands of tons of acetylene, acetaldehyde, vinyl ethers are produced at the Karaganda Synthetic Rubber Plant, and valuable intermediate hydrocarbon products are put out by the coke-chemical plant at the Karaganda Metallurgical Combine and other enterprises, in connection with which abruptly arises the problem of the complex processing of these types of chemical raw materials. To solve this task, stressed D. N. Abishev, it seems advisable to create a specialized scientific subunit of the KaSSR Academy of Sciences -- an Institute of Organic Synthesis and Coal Chemistry -- based on the organic chemistry section of the Metallurgical Chemistry Institute of the KaSSR Academy of Sciences. The basic research areas of the institute now being organized should be to establish the study of converting low-energy coals for the purpose of using them to obtain valuable chemical products; the study of the conversion of acetylene and its derivatives, and also the wastes from coke-chemical and other production with the purpose of developing methods to synthesize new chemical substances; and research on new catalytic and electrocatalytic reactions of oxidation and of the reduction of heterofunctional organic compounds and creating new methods of synthesis on these bases.

For the intensive development of these areas, it is necessary to have scientific personnel of high qualification, training for young specialists, and construction of a number of facilities.

The general director of Tsentrkazgeologiya, L. F. Dumler, devoted his speech to the basic areas of scientific research in the geological sciences in Central Kazakhstan. He gave particular attention to the necessity for conducting geological-geophysical research directed toward the study of the structure and structural-metallogenic regionalization of deep horizons of the earth's crust and upper mantle of Central Kazakhstan, with consideration given to the distinct metallogenic and geochemical specialization in the upper horizons of the lithosphere and with the task of revealing new areas of exploratory work; theoretical research on tectonics and metallogenics oriented toward revealing new areas of exploration based on modern conceptions of plate tectonics, accompanied by the compilation of a complex of paleotectonic charts and determination of the patterns of distribution of the useful mineral deposits of Central Kazakhstan; the lithological-stratigraphic and geochemical study of Prepaleozoic formations of Central Kazakhstan. The solution of these problems requires the organization of appropriate scientific laboratories. The organization of a scientific center in Karaganda is timely and urgently needed, said L. F. Dumler.

T. A. Abdrazakov, rector of the Karaganda Cooperative Institute and doctor of economic sciences, noted the correctness of adopting a decision relative to the necessity of organizing a branch of the Institute of Economics of the KaSSR Academy of Sciences within the Central Kazakhstan Scientific Center. The scientific collective of economic scientists under Central Kazakhstan conditions must work on the development of the following basic problems: the rational location of productive forces and the complex development of the Central Kazakhstan economy; the rational utilization of labor resources; increase in the effectiveness of civil production; and increase in the effectiveness of capital investment.

O. A. Zhautykov, academician-secretary of the Department pf Physical-Mathematical Sciences of the KaSSR Academy of Sciences, stressed that the solution of problems of rock mechanics, gas dynamics, and the modelling of the process of atmospheric pollution are related to the application of mechanical-mathematical and physical-mathematical methods. In this connection, there should be in prospect a provision for organizing some kind of Physical Mathematical Section at the branch (or Department) with the following laboratories: a Laboratory of Nuclear Physics Methods of Analysis and Control, a Laboratory of Computer and Applied Mathematics, and a Laboratory of Atmospheric-Optical Research on Air Pollution.

Sh. A.-G. Bolgozhin, director of the Institute of Mining of the KaSSR Academy of Sciences and a corresponding member of the KaSSR Academy of Sciences, reported on the basic scientific areas of work by the Karaganda branch of the Institute of Mining. The Institute of Mining of the KaSSR Academy of Sciences is conducting scientific research on the national fundamental problem. "The Development of Theoretical Bases and New Methods for Increasing the Effectiveness of Extraction Equipment and Processing of Mineral Raw Materials," which is being coordinated by the USSR Academy of Sciences. Research on this problem is directed toward the improvement in or creation of new technology and techniques for underground and open extraction of coal in the Ekibastuz and Karaganda Basins, nonferrous and ferrous metal ores in the Dzhezkazganskoye, Tekeliyskoye, Karazhal'skoye, Sokolovsko-Sarbayskoye, and other deposits. construction materials and chemical raw materials, and also toward complex utilization and loss reduction of useful minerals during extraction and the creation of safe and comfortable working conditions at mines and pits.

The Institute of Mining, noted Sh. A.-G. Bolgozhin, in fulfillment of the decree of the Kazakhstan Communist Party Central Committee and with the aim of bringing science closer to production, is already conducting preparatory work on organizing a branch at Karaganda. The basic scientific areas of the branch should be the development of theoretical bases for the creation of peopleless technology for excavating coal beds in the Karaganda Basin; means for controlling gas emanation in coal mines; scientific-technical solutions for effective conduct of capital mining projects in the Ekibastuz Coal Basin; scientific bases for rational and complex exploitation of deposits in the Uspenskiy Ore Belt, and also improvement in methods for opening up and developing the deposits of ferrous metal ores in Central Kazakhstan.

To conduct work in these areas, the institute needs additional financing, production space, and living quarters.

The growing production and scientific potential of Central Kazakhstan, particularly Karagandinskaya Oblast, and the objective necessity for its rational utilization urgently call for the creation of a scientific center here -- a Department of the KaSSR Academy of Sciences, stated T. A. Ashimbayev, director of the Institute of Economics of the KaSSR Academy of Sciences and a corresponding member of the KaSSR Academy of Sciences, in his speech. There is no question that economics ought to be represented in this center. The grounds for conducting many types of research in this branch of science are sufficient. Its task, on the basis of an organic unification of theoretical and applied research, consists, on the one hand, of enriching science and, on the other hand, of presenting verified conclusions and recommendations for the solution of pressing practical problems to oblast managers and planning bodies.

Karagandinskaya Oblast is a center for the fuel and energy industry and for ferrous and nonferrous metallurgy. Machine building and chemical industry have been developed here. Problems for the development of these sectors today are becoming more and more urgent. In a speech at the October (1980) plenum of the CPSU Central Committee, Comrade L. I. Brezhnev paid special attention to them. In the CPSU Central Committee draft, "Basic Directions for the Economic and Social Development of the USSR for 1981-1985 and for the Period to 1990," great significance is given to the growth of production and to the increase of its effectiveness in the fuel-energy sectors, metallurgy, machine building, and chemical industry, being essentially the sectors of specialization in Karagandinskaya, Pavlodarskaya, and the other oblasts of Central Kazakhstan. Therefore, to begin with, the necessity arises to conduct research on such topics as the following: "The Development of Problems of Effectiveness of Utilization in the Fuel-Energy Sectors" and "Complex Development and Increase of Effectiveness in Ferrous Metallurgy," with the subsequent inclusion of problems of increasing effectiveness in the development of machine building, chemical industry, and others.

A. A. Abdulin, director of the Labor Red Banner Institute of Geological Sciences imeni K. I. Satpayev of the KaSSR Academy of Sciences and an academician of the KaSSR Academy of Sciences, stressed that the program for the growth of mineral resources put forth by the 11th Five-Year Plan, proposes still more intensive development and greater effectiveness in geological research. The necessity of creating a Karaganda branch is dictated first of all by the enormous natural riches for which Central Kazakhstan is famous. Here are concentrated deposits of ferrous, nonferrous, and rare metals, on the basis of which great mining enterprises and plants operate. At the present time. the necessity has come about for scientifically substantiated exploration of deposits that have no surface outcroppings, which require more detailed study of the history of their geological development beginning with Precambrian and up to our time, in which special attention must be given to the study of the deep structures of the territory. This will serve as a basis for conducting broad metallogenic research with the end goal of developing scientifically substantiated forecasts for more rational directions in prospecting and exploration work. All these tasks can be accomplished more expeditiously with the organization of a scientific unit -- a branch of the Institute of Geological Sciences imeni K. I. Satpayev of the KaSSR Academy of Sciences in Karaganda.

The scientific areas of the branch during the first years of work should include three basic areas: regional geology, deep geology, and metallogenics.

The organization of an Institute for Organic Synthesis and Coal Chemistry in Karaganda is one of the most important steps in creating a scientific center in

Central Kazakhstan, according to a speech by B. A. Zhubanov, academician-secretary of the Department of Chemical Engineering Sciences of the KaSSR Academy of Sciences. At the present time, life itself has posed the task of wide utilization of coal for the needs of organic chemistry. At the 37th session of the Council for the Coordination of the Scientific Activities of the Academies of Sciences of Union Republics, which took place in Alma-Ata in May of this year, and at the second conference-meeting of academician-secretaries and representatives of chemistry departments of the USSR Academy of Sciences and academies of sciences of the union republics, which took place in December 1980, special stress was put on the role of coal as a valuable chemical raw material. In the opinion of B. A. Zhubanov, coal chemistry should be included in the area of scientific activity of the future institute, especially since there is a synthetic rubber plant in Temirtau that produces a large quantity of calcium carbide and acetylene. In addition, it must be noted that the Metallurgical Chemistry Institute for a long time has conducted research on coal chemistry, the chemistry of acetylene compounds, and so forth.

Since the future institute is faced with tasks having enormous significance for the needs of the republic economy, it is already necessary now to make provision for the construction of a production building and also an experimental base, without which the practical realization of scientific results is not possible at the present time.

Zh. S. Sydykov, deputy director of the Institute of Hydrogeology and Hydrophysics of the KaSSR Academy of Sciences and a corresponding member of the KaSSR Academy of Sciences, noted that under the conditions of the vast territory of Central Kazakhstan, with very limited resources of surface water sources, underground water has great significance for the development of productive forces. Research by scientists of the institute here has revealed a large number of ground and artesian basins, which can be utilized successfully for the water supply of economic sites. However, we are faced with solving an even greater and more complicated problem in the field of in-depth study of questions relating to the formation and location of various genetic types of underground water, the charting and precise definition of their underground resources, the development of methods for rational extraction, broad exploitation, and so forth. Great significance is acquired by research on hydrogeology in the Irtysh-Karaganda canal zone for the study of salt-water regimes and the balance of ground water in agricultural irrigation regions with the goal of forecasting the processes of salinization and marshing of land and the development of measures for their prevention.

To conduct scientific research in the above-mentioned and other areas and to bring it closer to production, it is necessary without question to organize a Karaganda hydrogeological branch of the Institute of Hydrogeology and Hydrophysics of the KaSSR Academy of Sciences. However, during the first stage, it would be expedient to organize a 15- to 20-person hydrogeology section within the branch of the Institute of Geological Sciences imeni K. I. Satpayev.

The first secretary of the Karaganda obkom of the Kazakhstan Communist Party, A. G. KORKIN, stressed in his speech that the Kazakhstan Communist Party Central Committee and the republic council of ministers are giving a large amount of attention to the Karaganda regional production complex, the formation of which has a significant influence on the development of the productive forces of Kazakhstan.

A new manifestation of concern about the development of Karagandinskaya Oblast was the decree by the Kazakhstan Communist Party Central Committee and the KaSSR Council of Ministers, On Measures for Strengthening the Supply and Equipment Base of the Kazakh SSR Academy of Sciences for Further Increasing the Effectiveness of Scientific Research, which provided for the creation in Karaganda of a number of academy scientific institutions and, on this basis, a Karaganda Department of the KaSSR Academy of Sciences. We are grateful to the Kazakhstan Communist Party Central Committee and to the government of the republic for this decision and are convinced that this will have an undeniably positive influence on hastening the working out of the scientific-technical problems of our region.

I want to express gratitude to the presidium of the KaSSR Academy of Sciences and to all the comrades who have come to visit our oblast to hold their visiting session of the presidium devoted to implementing the decision of the Central Committee and government of the republic.

The urgency and exceptional importance of this decision are perceived with special clarity if one considers that Karagandinskaya Oblast is a great industrial, scientific, and cultural center of Kazakhstan, with a population of 1 million 260 thousand people. Karagandinskaya Oblast is a dynamically developing region. Thirty to thirty-five years ago there was virtually nothing here but the coal industry. Today, besides the coal industry here, there are such important branches of industry as ferrous and nonferrous metallurgy, electric power, chemical industry, machine building, light industry and food industry, and construction materials industry.

In the economic system of the republic, the oblast stands out as one of the most developed regions; its proportion of the volume of industrial production is about 15 percent. Concentrated here is the whole republic production of iron, coke, coking coal, steel, and almost half the coal mining. In addition, we put out about half the calcium carbide being produced in the country. The oblast is a large producer of consumer goods.

The industry of the oblast consists of the coal basin -- one of the most mechanized and highly concentrated in the coal industry of the country, the Karaganda Metallurgical Combine, and the synthetic rubber plant. Within the next few years, the largest industry will be a plant for technical rubber goods, which will provide products worth 0.5 billion rubles a year.

Capital construction is being implemented on a broad scale. We have nine construction and installation trusts, a large combine for the construction of coal mines, and the "Irtyshkanalstroy" construction administration. Capital investments have reached over 630 million rubles a year, and a powerful base has been created for the construction industry. A tenth of the republic program for housing construction relates to our oblast.

Great changes have taken place in agriculture; it is developing on the basis of deep specialization and cooperation among administrations. As the result of putting into operation one of the great water arteries of the country -- the Irtysh-Karaganda Canal, 500 kilometers long, average yearly agricultural production during the current five-year plan has risen by 34.2 percent in comparison with that of the previous five-year plan.

Even this short, summary characterization permits one to see the large and complicated tasks of the economic and social-cultural development of the oblast. The size of these tasks requires a significant amount of stirring up to solve the complicated scientific-technical problems of the region. The most basic among these already have been stated here to a certain degree. We are excited by the more important scientific problems that require solution, especially in the fields of mining, metallurgy and chemistry, geology and hydrogeology , and economics.

Research on the social-economic and ecological aspects of intensive industrial and agricultural development in Central Kazakhstan is important to us.

We would like faster development of means for conducting extraction work under conditions of complex and irregular rock bedding, of problems of utilizing coals that are difficult to enrich or have high ash content, and of intensification of fuel combustion for metallurgy and power.

The oblast has a large amount of interest in the development and introduction of rational means for complex utilization of the iron and manganese ores of Kazakhstan with the extraction of rare elements and alloy components and for the intensification of processes for metal production and the development of means for raising its quality through the use of iron ore with high sulphur and phosphorus content, and also complex utilization of chemical and petrochemical raw materials and the creation of agricultural fertilizers from metallurgical and chemical production wastes.

We are weak in conducting geological-geophysical research directed toward the study of the structures and metallogenic structural regionalization of deep horizons of the earth's crust of Central Kazakhstan and there is inadequate study of the factors that determine the presence of gas in deep horizons and low-amplitude tectonics of the mine fields of the Karaganda Coal Basin.

Awaiting solution are scientific problems of drawing off surface water from the Irtysh-Karaganda Canal to the drained underground areas of the Verkhne-Sokurskiy Artesian Basin with the purpose of replenishing its contents and creating a reserve source of water supply.

Collectives of scientific-research institutions and higher educational institutions of the region are working at the present time on the solution of some of the problems mentioned. Functioning just in the oblast are 16 scientific-research institutions, such as the Metallurgical Chemistry Institute of the KaSSR Academy of Sciences, the All-Union Scientific-Research and Planning-Design Coal Institute, the State Institute for Mine Planning, the State Institute for the Design of Coal Mining Machinery, Karaganda State University, the Polytechnical Institute, in which, together, there are 2 academicians, 1 corresponding member, 56 doctors of sciences, about 1100 candidates of sciences, and over 4 thousand scientific workers. However, the scientific investigations they work on are disconnected; they are not directed toward the solution of the above-mentioned complex programs, and there is insufficient coordination. In this connection, it must be noted that the research institutions of Karaganda are basically ministerial scientific organizations which are engaged in applied research in support of the industrial needs of Karagandinskaya Oblast and Central Kazakhstan.

Therefore, oblast party organizations and the large scientific community of the oblast have welcomed with great satisfaction the decision to open in Karaganda a Department of the KaSSR Academy of Sciences, which has been called upon to develop and coordinate fundamental and applied research directed toward hastening the development of the productive forces of the region with the highest priority. And we are prepared to take a most active part in implementing this decision and to put the necessary measures into practice to create its supply and equipment base.

At the same time, I would like to express several wishes to the presidium of the republic Academy of Sciences. In our view, it would be advisable to hasten the opening, preferably in 1981, of the designated branches and also the Institute of Organic Synthesis and Coal Chemistry of the academy and to establish a program for their activities and to confirm the structure and numbers of personnel and what is necessary for the concrete consideration of the question of housing them.

We would ask the presidium of the KaSSR Academy of Sciences to look into the possibility of sending scientific personnel from head institutes to the branches being created.

Of great importance is the question of timely construction of the necessary production accomodations for the scientific center. In this connection we ask for the designation of necessary capital investment allotments and limits for design and construction during 1981 and 1982.

And lastly, in the interests of getting on with business, there is now already a need to examine the possibility of alloting the staff workers who must work out the organizational questions during the period of creating the scientific center. Perhaps, it would be expedient to establish the department itself sooner -- by the end of 1981 or the beginning of 1982.

There are no doubts that holding the visiting session of the presidium of the republic Academy of Sciences in Karaganda and the lively discussion of the questions will help speed the opening of the scientific center, the solution of the important scientific-technical problems of the region, and an increase in the effectiveness of scientific research as a whole in the republic.

Concluding remarks were made by A. M. KUNAYEV, president of the KaSSR Academy of Sciences, a corresponding member of the USSR Academy of Sciences and an academician of the KaSSR Academy of Sciences.

DECREE

Of the Presidium of the Kazakh SSR Academy of Sciences, the bureau of the Karaganda Obkom of the Kazakhstan Communist Party, and the Ispolkom of the Oblast Council of People's Deputies:

Karaganda No. 214/172/5 18 December 1980

On Implementing the Decree by the Kazakhstan Communist Party Central Committee and the Kazakh SSR Council of Ministers of 15 April 1980, No. 161, "On Measures for Strengthening the Supply and Equipment base of the Kazakh SSR Academy of Sciences for Further Increase in the Effectiveness of Scientific Research"

The Presidium of the Kazakh SSR Academy of Sciences, the bureau of the Karaganda obkom of the Kazakhstan Communist Party, and the ispolkom of the oblast Council of People's Deputies note that the KaSSR Academy of Sciences and its local scientific institutions are conducting certain work on the development of fundamental and applied research in the republic, on raising its effectiveness and quality, on strengthening the relations between science and production, and on introducing completed projects into the economy.

One of the basic objects of research by scientific institutions of the KaSSR Academy of Sciences is Central Kazakhstan, with its very rich mineral resources, large enterprises for ferrous and nonferrous metallurgy, coal and chemical industry, and developed agriculture. The scientific institutions of the republic Academy of Sciences are working on about 100 topics related to the enterprises of Karagandinskaya, Dzhezkazganskaya, and Tselinogradskaya Oblasts.

However, the Metallurgical Chemistry Institute that exists in this region does not fully insure the effectiveness and necessary rates of development for scientific research and broad introduction of its results into production. The intensive development of Central Kazakhstan requires more single-minded purposefulness in the work on the solution of the scientific problems of the region in the fields of geology, hydrogeology, mining, ferrous and nonferrous metallurgy, organic chemistry and coal chemistry, catalysis, biology, and a number of other branches of science.

With the aims of developing further the supply and equipment base of institutions of the KaSSR Academy of Sciences and of strengthening their role in the solution of the most important problems of social-economic and cultural development of Central Kazakhstan, the presidium of the KaSSR Academy of Sciences, the bureau of the Karaganda obkom of the Kazakhstan Communist Party, and the ispolkom of the oblast Council of People's Deputies DECREE THE FOLLOWING:

1. To adopt for strict fulfillment the decree of the Kazakhstan Communist Party Central Committee and the KaSSR Council of Ministers of 15 April 1980, "On Measures for Strengthening the Supply and Equipment Base of the KaSSR Academy of Sciences for Further Increase in the Effectiveness of Scientific Research."

2. To consider as one of the most important tasks of the KaSSR Academy of Sciences, the further development of the more important and long-range areas of fundamental science in Central Kazakhstan, as much increase as possible in the effectiveness of applied scientific developments, and the strengthening of relations between science and production, and to give attention to expanding research in the fields of mining, geology, hydrogeology, ferrous and nonferrous metallurgy, chemistry, and economics.

3. To organize in 1981 in Karaganda, an Institute of Organic Synthesis and Coal Chemistry on the basis of the Metallurgical Chemistry Institute, with specialization in the field of converting acetylene and its derivatives, low-energy, high-ash coal and the development of theoretical bases for new catalytic and electrocatalytic reactions for the oxidation and reduction of organic compounds. The institute, with a staff of 150 persons, will be housed in the building of the Metallurgical Chemistry Institute, with subsequent allotment of necessary production space.

4. To organize in Karaganda, during 1981, sections of the following:

- The Institute of Geological Sciences imeni K. I. Satpayev of the KaSSR Academy of Sciences, with specialization in the fields of regional and deep geology and metallogenics, with a staff of 50 people.
- The Institute of Mining of the KaSSR Academy of Sciences, with specialization in the fields of unmanned extraction of coal beds, air and gas dynamics of clean coal-faces in coal mines, open working of coal deposits, and the finding and working of ferrous and nonferrous metal ores, with a staff of 90 persons.
- The Institute of Economics of the KaSSR Academy of Sciences, with specialization in the fields of forming the administrative and social structures, the development and management for a regional production complex, quality control, and increase in the effectiveness of production, with a staff of 25 persons.

5. To create, by the end of 1981, on the foundation of existing and newly organized academy scientific institutions, a Karaganda Department of the Kazakh SSR Academy of Sciences (scientific center of the KaSSR Academy of Sciences).

6. To provide allotments to the Karaganda gorkom of the Kazakhstan Communist Party and the gorispolkom for 1981-1982, of housing for production (3000 square meters) and living quarters (2500 square meters) in Karaganda for workers of the newly organized sections of institutes and for the Institute of Organic Synthesis and Coal Chemistry of the KaSSR Academy of Sciences.

7. To obligate the sections for planning-financing and capital construction of the KaSSR Academy of Sciences to provide, in the draft 1981 plan, sources of financing for the Institute of Organic Synthesis and Coal Chemistry and for the newly organized Karaganda sections of existing institutes, and for the Karaganda Department of the KaSSR Academy of Sciences. To provide in the plan for economic and social development for 1981-1985 for the allocation of necessary capital investment and limits for designing and building by 1983 the Karaganda Department, with first priority, and the Metallurgical Chemistry Institute of the KaSSR Academy of Sciences, with second priority.

A. KUNAYEV
President of the Kazakh SSR Academy of Sciences and Corresponding Member of the USSR Academy of Sciences

A. KORKIN
Secretary of the Karaganda Obkom of the Kazakhstan Communist Party

S. DOSMAGAMBETOV
Chairman of the Ispolkom of the Karagandinskaya Oblast Council of People's Deputies.

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